1. A method for depositing a platinum group metal on a substrate, comprising:

depositing said platinum group metal onto a substrate in a CVD deposition chamber at a predetermined temperature and pressure;

irradiating the chamber interior with ultraviolet light; and

annealing said substrate containing said deposited platinum metal group in an oxygen atmosphere at low temperature.

2. The method according to claim 1, wherein said platinum group metal is selected from the group consisting of Ru, Rh, Ir and Pt.

3. The method according to claim 2, wherein said platinum based metal is Pt.

4. The method according to claim 1, wherein said predetermined temperature is from about -100°C to about 200°C.

5. The method according to claim 4, wherein said predetermined temperature is from about 20°C to about 150°C.

6. The method according to claim 5, wherein said predetermined temperature is about 25°C.

7. The method according to claim 1, wherein said predetermined pressure is from about 0.1 to about 1000 Torr.

8. The method according to claim 5, wherein said predetermined pressure is from about 1 to about 10 Torr.

9 7. The method according to claim 1, wherein said substrate includes a barrier layer between said substrate and said platinum group metal.

10 8. The method according to claim 7, wherein said barrier layer is formed of TiN, TaN, WN or TiAlN.

11 9. The method according to claim 8, wherein said barrier layer is TiN.

12 10. The method according to claim 1, wherein said low temperature anneal is from about 150°C to about 400°C.

13 11. The method according to claim 10, wherein said low temperature is from about 200°C to about 300°C.

14 12. The method according to claim 11, wherein said low temperature is about 250°C.

15 13. The method according to claim 1, wherein said platinum metal group is deposited by forming an organic platinum metal group precursor on said substrate then subsequently irradiating said precursor with said ultraviolet light to form a platinum metal group film over said substrate.

16 14. The method according to claim 1, wherein said platinum metal group is deposited by simultaneously introducing an organic platinum metal group precursor in the presence of said ultraviolet light to form a platinum metal group film over said substrate.

17 15. A method for depositing a platinum metal on a substrate, comprising:

introducing a substrate into a CVD deposition chamber;

bubbling a gas through an organic platinum metal precursor;

introducing said gas and said organic platinum metal precursor to said CVD deposition chamber;

allowing said organic precursor to coat said substrate;

irradiating said organic precursor with ultraviolet light in said CVD deposition chamber at a predetermined temperature and pressure for a predetermined time to decompose said organic precursor and form a platinum film onto said substrate; and

annealing said substrate in an oxygen atmosphere at low temperature.

16. The method according to claim 15, wherein said organic platinum metal precursor is selected from the group consisting of cyclopentadienyl trimethylplatinum (IV) and methylcyclopentadienyl trimethylplatinum $CH_3(C_5H_5)Pt(CH_3)_3$.

17. The method according to claim 15, wherein said organic platinum metal precursor is methylcyclopentadienyl trimethylplatinum $CH_3(C_5H_5)Pt(CH_3)_3$.

18. The method according to claim 15, wherein said predetermined temperature is from about -100°C to about 200°C.

19. The method according to claim 18, wherein said predetermined temperature is from about 20°C to about 150°C.

20. The method according to claim 19, wherein said predetermined temperature is about 25°C.

21. The method according to claim 16, wherein said predetermined pressure is from about 0.1 to about 1000 Torr.

22. The method according to claim 21, wherein said predetermined pressure is from about 1 to about 10 Torr.

23. The method according to claim 16, wherein said predetermined time is from about 15 to about 6000 seconds.

24. The method according to claim 16, wherein said substrate includes a barrier layer.

25. The method according to claim 24, wherein said barrier layer is formed of TiN, TaN, WN or TiAlN.

26. The method according to claim 25, wherein said barrier layer is TiN.

27. The method according to claim 16, wherein said low temperature is from about 100°C to about 400°C.

28. The method according to claim 27, wherein said low temperature is from about 200°C to about 300°C.

29. The method according to claim 28, wherein said low temperature is about 250°C.

30. The method according to claim 16, further comprising rotating said substrate in the CVD deposition chamber to coat said substrate with said organic platinum metal precursor.

31. The method according to claim 16, wherein said platinum metal is deposited at a thickness of about 20 to about 2000 Angstroms.

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32. The method according to claim 31, wherein said platinum metal is deposited at a thickness of about 50 to about 400 Angstroms.

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33. The method according to claim 15, wherein said platinum metal is deposited by forming an organic platinum metal precursor on said substrate and subsequently irradiating said precursor with said ultraviolet light to form a platinum film over said substrate.

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34. The method according to claim 15, wherein said platinum metal is deposited by introducing said organic platinum metal precursor in the presence of said ultraviolet light to form a platinum metal film over said substrate.

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35. A method for depositing a platinum metal on a substrate, comprising :

introducing a substrate into a CVD deposition chamber;

introducing an organic platinum metal precursor to said CVD deposition chamber and irradiating said organic precursor with ultraviolet light in said CVD deposition chamber at a predetermined temperature and pressure for a predetermined time to decompose said organic precursor and form a platinum film onto said substrate; and

annealing said substrate in an oxygen atmosphere at low temperature

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36. The method according to claim 35, wherein said platinum metal is deposited by forming an organic platinum metal precursor on said substrate then subsequently irradiating said precursor with said ultraviolet light to form a platinum metal film over said substrate.

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37. The method according to claim 35, wherein said platinum film is simultaneously deposited by introducing said organic platinum metal precursor

in the presence of said ultraviolet light to form a platinum metal film over said substrate.

38. The method according to claim 35, wherein said organic platinum metal precursor is selected from the group consisting of cyclopentadienyl trimethylplatinum (IV) and methylcyclopentadienyl trimethylplatinum $CH_3(C_5H_5)Pt(CH_3)_3$.

39. The method according to claim 35, wherein said organic platinum metal precursor is methylcyclopentadienyl trimethylplatinum $CH_3(C_5H_5)Pt(CH_3)_3$.

40. The method according to claim 35, wherein said predetermined temperature is from about -100°C to about 200°C.

41. The method according to claim 39, wherein said predetermined temperature is from about 20°C to about 150°C.

42. The method according to claim 40, wherein said predetermined temperature is about 25°C.

43. The method according to claim 35, wherein said predetermined pressure is from about 0.1 to about 1000 Torr.

44. The method according to claim 42, wherein said predetermined pressure is from about 1 to about 10 Torr.

45. The method according to claim 35, wherein said predetermined time is from about 15 to about 6000 seconds.

46. The method according to claim 35, wherein said substrate includes a barrier layer.

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47. The method according to claim 46, wherein said barrier layer is formed of TiN, TaN, WN or TiAlN.

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48. The method according to claim 47, wherein said barrier layer is TiN.

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49. The method according to claim 35, wherein said low temperature is from about 150°C to about 400°C.

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50. The method according to claim 50, wherein said low temperature is from about 200°C to about 300°C.

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51. The method according to claim 51, wherein said low temperature is about 250°C.

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52. A method for depositing platinum onto a substrate, comprising the steps of:

introducing a substrate into a CVD deposition chamber;

bubbling a non-reactive gas through an organic platinum precursor selected from the group consisting of cyclopentadienyl trimethylplatinum (IV) and methylcyclopentadienyl trimethylplatinum $CH_3(C_5H_5)Pt(CH_3)_3$;

introducing said non-reactive gas and said organic platinum precursor to said CVD deposition chamber;

irradiating said organic precursor with ultraviolet light in said CVD deposition chamber at a temperature of from -100°C to about 150°C and pressure of about 1 to about 10 Torr for about 30 to about 120 seconds to decompose said organic precursor and form a platinum group metal onto said substrate; and

annealing said substrate in an oxygen atmosphere at a temperature of from 150°C to about 400°C.

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53. The method according to claim 52, wherein said organic platinum precursor is methylcyclopentadienyl trimethylplatinum $CH_3(C_5H_5)Pt(CH_3)_3$.

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54. The method according to claim 52, wherein said substrate includes a barrier layer.

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55. The method according to claim 54, wherein said barrier layer is formed of TiN, TaN, WN or TiAlN.

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56. The method according to claim 52, wherein said platinum is deposited by forming an organic platinum precursor on said substrate then subsequently irradiating said precursor with said ultraviolet light to form a platinum metal film over said substrate.

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57. The method according to claim 52, wherein said platinum metal is deposited by simultaneously introducing said organic platinum metal precursor in the presence of said ultraviolet light to form a platinum metal film over said substrate.

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58. A capacitor comprising:

a first electrode and a second electrode;

a dielectric provided between said electrodes; and

wherein at least one of said first and second electrodes is formed of a continuous platinum group metal by CVD deposition and irradiation with

ultraviolet light at a predetermined temperature and pressure and annealed in an oxygen atmosphere at low temperature.

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59. The capacitor according to claim 58, wherein said electrode is formed of a material selected from the group consisting of Ru, Rh, Pd, Os, Ir, Au, Ag and Pt.

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60. The capacitor according to claim 59, wherein said electrode is platinum.

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61. The capacitor according to claim 58, wherein said platinum electrode is the lower electrode.

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62. A method for forming a memory capacitor comprising:

(i) depositing a platinum group metal on a barrier layer formed over a substrate to form a lower electrode of said memory capacitor comprising :

introducing said substrate into a CVD deposition chamber;

introducing an organic platinum based metal precursor to said CVD deposition chamber and irradiating said organic precursor with ultraviolet light in said CVD deposition chamber at a predetermined temperature and pressure for a predetermined time to decompose said organic precursor and form a platinum group metal film on said barrier layer ; and

annealing said substrate in an oxygen atmosphere at low temperature; and

(ii) forming a dielectric layer over said lower electrode;

(iii) forming an upper electrode over said dielectric layer.

63. The method according to claim 62, wherein said platinum metal group is deposited by forming an organic platinum metal group precursor on said substrate then subsequently irradiating said precursor with said ultraviolet light to form a platinum metal group film over said substrate.

64. The method according to claim 62, wherein said platinum metal group is simultaneously deposited by introducing said organic platinum metal group precursor in the presence of said ultraviolet light to form a platinum metal group film over said substrate.

65. The method according to claim 62, wherein said organic platinum based metal precursor is selected from the group consisting of cyclopentadienyl trimethylplatinum (IV) and methylcyclopentadienyl trimethylplatinum $CH_3(C_5H_5)Pt(CH_3)_3$.

66. The method according to claim 62, wherein said organic platinum based metal precursor is methylcyclopentadienyl trimethylplatinum $CH_3(C_5H_5)Pt(CH_3)_3$.

67. The method according to claim 62, wherein said predetermined temperature is from about -100°C to about 200°C.

68. The method according to claim 67, wherein said predetermined temperature is from about 20°C to about 150°C.

69. The method according to claim 68, wherein said predetermined temperature is about 25°C.

70. The method according to claim 62, wherein said predetermined pressure is from about 0.1 to about 1000 Torr.

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71. The method according to claim 70, wherein said predetermined pressure is from about 1 to about 10 Torr.

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72. The method according to claim 62, wherein said barrier layer is formed of TiN, TaN, WN or TiAlN.

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73. The method according to claim 72, wherein said barrier layer is TiN.

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74. The method according to claim 62, wherein said low temperature is from about 150°C to about 400°C.

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75. The method according to claim 74, wherein said low temperature is from about 200°C to about 300°C.

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76. The method according to claim 75, wherein said low temperature is about 250°C.

Add A'

Add B3